REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

Claims 1, 3-7 and 20-22 are present in this application and stand rejected under 35 U.S.C. §103(a) over JP 2002-226926 (Yamauchi) in view of US 2002/0015878 (Tsumura).

The Applicants greatly appreciate the interview with Examiner Lee on April 25, 2007. As explained in the interview, The outstanding rejection is based upon the assumption that particle sizes as recited in claim 1 and 7 could be obtained based upon the teachings of Yamauchi combined with the assertion that particle diameter is a "result effective variable." As stated in the Office Action on pages 4 and 5, Yamauchi does not disclose the average diameter of the catalyst particles. The Office Action then quotes from column 4 of Tsumura which describes the diameter of the catalyst metal belonging to the platinum group. The Office Action concludes that Tsumura "clearly teaches that the particle diameter is a result effective variable" and then asserts that discovering an optimum value or workable ranges involves only routine skill in the art, and is not novel.

First, there is no assertion that Tsumura discloses or suggest the appropriate diameter of catalysts particles which are platinum-containing nitride particles, as recited in claims 1 and 7. Figure 1 shows catalyst metal element 1.

During the interview, Ex. Lee stated that "objective evidence" is needed to overcome Yamauchi. Particles having the size recited in claims 1 and 7 cannot be manufactured according to the teachings of Yamauchi. In Yamauchi, a molten mixture of metal elements X and Y is cooled at a rate of 10^3 °C/sec or higher or in a weightless state to produce a solid solution of metal elements X and Y. The solid solution is heated in an atmosphere of gas-phase element Z at a potential sufficient for producing a compound of metal element X and gas-phase element Z and insufficient for producing a compound metal element Y and gas-phase element Z so as to precipitate a compound of metal element X and gas-phase element

Z. In this way, a composite functional material containing a matrix and fine particles which are disbursed in or on the surface of the matrix and made of the compound of metal X and element Z is obtained.

The methods taught in Yamauchi use rapid cooling or cooling in a weightless state. The molten mixture is rapidly cooled by a twin-roll method as described in examples 1 and 4, rapidly cooled by an atomization method as described in example 3, or pneumatically atomized and solidified during free fall as described in examples 2 and 5-7. According to the twin-roll method, the molten mixture is supplied to a pair of rolls rotating at a high speed. The molten mixture is splattered by the rolls to form droplets with an expected average diameter of tens of microns or larger. Similarly, the atomization methods also produce droplets of the molten mixture having an expected average diameter of tens of microns or larger. Brief descriptions of such methods are provided at www.answers.com/topic/powder-metallurgy.

Accordingly, Yamauchi does not disclose any method for producing a material having catalyst particles with an average diameter in the range recited in claims 1 and 7. Yamauchi does not teach a way to obtain a catalyst particle having a recited average diameter, and, if one follows the methods disclosed by Yamauchi, particles outside the claimed range would be expected to be produced. Further, as discussed above, Tsumura does not disclose any method to be used in Yamauchi to produce a material having catalyst particles within the recited average diameter range of claims 1 and 7, and there is no evidence that the teachings of Tsumura would be applicable to platinum containing nitride particles as recited in claims 1 and 7.

Accordingly, the §103 rejection must be withdrawn since it is not possible to obtain the material of claim 1 containing platinum containing nitride particles with an average diameter between 0.5 nm and 500 nm as recited in claim 1, or a fuel cell having a catalyst

layer containing platinum-containing nitride particles having the average diameter of between 0.5 nm and 500 nm using Yamauchi, or using Yamauchi and Tsumura.

Ex. Lee also inquired about the methods disclosed in the present application to produce the catalyst particles. One example is provided on pages 14-16 where ultrafine particles are calcinated and the conditions of the calcination are controlled to produce the appropriate particle size. Nitridation follows calcination. As described on page 16, the nitridation is carried out to make sure that nitrogen is introduced in the particles and to avoid flocculation. Table 1 on page 48 lists the results of examples 1-9, and the manufacture of the particles is described on pages 30-47. Typically, carbon particles containing Pt-based particles are obtained via a coprecipitation method as a precursor which is nitrided to produce carbon particles with fine Pt-based catalyst particles.

It is respectfully submitted that the present application is in condition for allowance and a favorable decision to that effect is respectfully requested.

Respectfully submitted,

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